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The Principle of Holistic Education and the Ideal of a Single Integrated Culture: Towards the Formation of an Approach

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Abstract

The mission of the university will not only be the training of specialists, but also the formation of the outlines of a civilization which is to implement the principles and guidelines of the new environmental strategy. The university of the 21st century will take on new functions. It is noteworthy that in the late 30s of the 21st century there will be an impressive amount of people, whose purpose of activity will be the implementation of the co-evolution mode (industry and agriculture will employ about 8% of the population), being the sphere of the future management. They are to be really creative elite professionals. In these circumstances, the university education should be open enough, while narrow professionalization will be its termination. The system of university education these days shows a confrontation between the two educational civilizations/cultures: the humanitarian and scientific ones.

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1. Introduction

At the turn of the 20th/21st centuries, the university has retained its status of a privileged center of the search for truth; the economic and cultural development of the European continent is largely determined by the state of university education, now going through a period of democratization; universities acquire the status of priority sectors of public life, which determine the intellectual status of society in the future; in determining the future image of Europe, universities will play the principal role.

This last circumstance, however, shares its existence with narrow discipline educational imperatives. A manifestation of the narrow discipline orientation of educational process is the formation of a segmented consciousness that manifests itself in a fragmentary vision of reality and prevents an adequate response to much of what requires an immediate and adequate reaction to the threat of impending ecological disaster, the fall of morality, and the loss of spiritual values. In the literature, there is an idea of creating a new self-organizing

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environment that alone can imbue an individual with a sense of personal responsibility for the survival of the world. It has been realized that the mission of education is not only to transfer the cultural heritage, but also to prepare an individual for a life in the era of escalating crises (the so-called anticipatory, preventive function of university education), being a process that Edgar Morin called the democracy of reason, rather than the democracy of mass consumption society. The democracy of reason can lead to the solution of global problems through the formation of global ethics and global responsibilities as the rules of a new humanism. An implementation of the principles of democracy of reason dictates the need to reform the principles of the system of university education. In the literature, there is a point of view, according to which this reform should not proceed from the traditional understanding of the disciplinary foundation of sciences, but rather from the thesis of strengthening the integrity of the fundamental nature of university education, given the necessity of looking beyond the traditional, disciplinary vision of the foundation of sciences, keeping instead with the concepts focused on the paradigmatic transformation of science in the 20th/21st centuries and its conversion into a multidisciplinary stage of post-nonclassical science. It makes sense to replace the mechanistic deterministic picture of the world by the holistic emergent or synergistic evolutionary one. Conceptual substantiations of the holistic emergent picture of reality can be found in the works of N. Vernadsky and Teilhard de Chardin, as well as in sociobiology and in the concepts of the scientific materialism of I. Prigogine and I. Stengers (Prigogine I. and Stengers I., 1984). These concepts will bring mankind back to the idea of synthesis of science and ethics at a higher level. The situation involves a large-scale expansion of the concept of fundamental university education: nature, society, and humanity will be represented as an entirety in an interdisciplinary dialogue of university education, where the main thing is the problem of synthesis of the two cultures: the scientific and humanitarian ones (Snow, 1977). Even today, the problem of disunity and alienation of the scientific and humanitarian spheres of university education is quite evident, just as evident as the need to form a so-called evolutionary science. It is through synthesis that enrichment of “the two cultures” will come to life; it is synthesis that will enrich both the rational way of creating the reality and the intuitive way, emotional and imaginative. The necessity of such a synthesis of the two cultures was foreseen by G. Hegel when he wrote that no culture is self-sufficient: it cannot evolve forever; without using the methods of another culture, it may turn into a chaos of absurdity (Hegel, 1977). The essence of a new scientific paradigm according to Prigogine, as stated in “From Being to Becoming”, is that there is the possibility of a universal way to describe the phenomenon of self-organization; the meaning of a system’s openness becomes manifest, as well as the role of chance and the constructive role of chaos; now we can speak of the emergence of a single metalanguage of scientists and humanitarians, a language of dialogue; we can see the outlines of understanding and rapprochement of the two cultures, as they return to unity at a new level of awareness of reality (Prigogine I. and Stengers I., 1984). It is this tendency that brings a hope for overcoming the crisis. In the United States, the curricula of elite universities in humanities include courses on the history of science. In science there is a transition to the synergistic evolutionary paradigm which might help change the situation, because, as noted by V.S. Stepin, “... the problems of society, to a large extent, are related to the long-established linear, deterministic approach to nature and technology, which has been projected to the society and contributed to the development of positivism, consumer ideology, an inability to anticipate the environmental, civilizational and educational crises.” (Stepin, 1997)

Overcoming the alienation of the two cultures, the scientific and humanitarian ones, with their different visions of the world, is possible through the use of the potential inherent in the comprehensive historical, philosophical and cultural approaches, organically connected with the new synergistic evolutionary paradigm of natural science, bringing together interdisciplinary communications and principles at the level of universal laws of science and culture, while the consideration of the cultural and historical context of the era and the role of personality in the drama of scientific ideas will recreate the humanitarian component of natural sciences. Synergetics calls for a dialogue of the sciences and humanities, a dialogue of the two schools of thought, which, in the process of elite university education, will promote the development of an integral picture of the world. “Synergistic knowledge” will be a new way of perception that will reveal the essence of the evolutionary synergistic approach, much needed in the training of elite specialists. It is synergetics that makes it possible to connect two mutually complementary ways of understanding the world, being comprehension through the image

and through the number: “Synergetics allows one to bring together East and West, the Eastern, visual, intuitive, and the Western, verbal, logical, perceptions of the world. The new features of this synthesis can be expressed somewhat differently. Visualization of synergistic knowledge by computers can serve as a bridge between the humanities and the sciences, as well as between the traditional images of culture and the latest achievements of science, between the beauty of works of art and the rigor of scientific results...” (Stepin, 1997).

The fundamental nature of university training should be strengthened by integrative processes of interdisciplinary synthesis that make education less applied (instrumental). Z.Gelman, for example, observes a pattern which emerges on a basis of the integration of scientific knowledge in the field of education: the integration of scientific knowledge occurs at different levels and at different scales. Intradisciplinary and interdisciplinary integration can relate to different subjects and different topics of the same subject. Integration takes place in conditions of a constant increase in integrative components. This manifests itself, for instance, in the formation of a new scientific picture of the world. At the same time, the implementation of the idea of a harmonious union of sciences and humanities in the university education is related to the formation of a “new way of knowledge”, the so-called “synergistic knowledge”, whose paradigm is formed at the post-nonclassical, bifurcation stage of scientific development. Although the term “synergistic knowledge” is metaphorical, we believe it has enough force to grasp a quite specific and by now clear-cut trend of rapprochement between sciences and humanities in a single process of elite university education. Synergetics is a new interdisciplinary field, and it is synergetics that defines both the principles and the general opportunities of interdisciplinary synthesis, including that kind of synthesis which is so essential in the process of university education. Speaking of synergistic knowledge in the context of the unity of the two cultures, one can see the peculiarity of this new way of perception in its focus on the key features of the paradigm of post-nonclassical science, with its peculiarities especially manifested in the inherent non-linear style of thinking, the ambiguity of theoretical concepts and descriptions, the new understanding of the role of chaos in the Universe (as an essential and constructive origin of the Universe, as a creative power of the overall picture of self-organizing reality). The non-linear way of thinking is inherent precisely in the post-nonclassical paradigm. “In this we are aided” – argues V.I.Arshinov – “by metaphor, art, and humanitarian knowledge, being an indispensable participant in a dialogue which is an integral component of synergistic knowledge, in the context of which order and disorder appear not as opposites, but rather as something that cannot be separated from each other.” (Arshinov, 1994) Nature, regarded from the standpoint of synergistic methodology, is a set of open non-equilibrium nonlinear systems evolving conjointly; this is a world of “human-dimensional” systems, and the anthropic principle, as a principle of self-selection, appears as an integral principle of the self-organization and human-dimensionality of evolution. The discovery of dynamical chaos can provide exact science with a quality of openness to humanitarian knowledge; it fills the anthropic principle with synergistic post-nonclassical content. In the literature, the idea of dialogue is now seen as a communicative, meaning-generating principle of post-nonclassical science. This idea forms the concept of a common synergistic hyperspace of unfolding existence and its perception. Through the perception of this space, there emerges the synergy of human nature, complete with the linguistic space of research for the personal and evolutionary foundations of human existence.

The most important task of university education today is the development of the holistic scientific outlook of a specialist facing the need to master the basics of one human culture; the fundamentalization of education, on the other hand, is feasible through the use of the initial settings of the interdisciplinary approach to the formation of the educational environment of the modern university. Interdisciplinary courses form a basis that synthesizes the fundamental knowledge, and this is the basis for the development of general and professional culture, the premise and basis for adaptation to a new profession; this is the body of knowledge that forms the holistic view of the world and man’s place in it. This body of knowledge allows one to go beyond the subject disunity of science, thus breaking through the isolation of the two cultures, scientific and humanitarian, caused by the lack of integral knowledge gained at the intersection of natural sciences, humanities and technical knowledge. The search for interdisciplinary solutions to complex problems makes it necessary to combine disciplines into training cycles; the implementation of the principle of interdisciplinary synthesis turns out to be a solution to the problem of searching through the various phenomena of a discipline for such phenomena that can be classified as single,

special and universal. In the search for the universal elements that establish interdisciplinary connections, a special role belongs to physics. As a foundation of all natural sciences and engineering, it allows one to identify ways to solve this problem based on the most common methodological positions. In this regard, certain parts of specific knowledge may be considered as a single facet of the physical picture of the world. Natural and technical sciences prove to be related to each other on the basis of certain attributes of universality. A discipline under study, when presented as a variety of individual, particular, and universal concepts, makes it possible to find interdisciplinary communications, which implies the intersection of the concepts. An elucidation of interdisciplinary connections on the basis of elements special for each discipline means that the individual disciplines form a system in which a succeeding element is connected with the preceding ones by ever-changing types of relations. Today, however, there are obvious factors that hinder the identification and implementation of interdisciplinary connections based on the attributes of universality. This implies the lack of a universal method that would allow one to represent the contents of a discipline in terms of relationships between the single, specific and universal. To implement the opportunities of interdisciplinary synthesis, it is suggested to use the systematic approach, which is the source of improving the university education; the role of the multidisciplinary approach is to unify, if necessary, various branches of knowledge, while the systematic approach does something similar to the components of the system, although this is not necessarily associated with the variety of disciplines. These two approaches are definitely not in conflict; in fact, they do complement each other. In the future, the fundamental and systematic nature of university education should be provided with ever stronger interdisciplinary ties, integrating knowledge in the process of education. In the long term, the solution of the problem of fundamentalization is possible only by ensuring the integrity of education, that entirety whose essence is determined by the interests of personal development: a person's identity characterizes holistic thinking, which combines elements of rational logical and intuitive imaginative ways of thinking; the problem of fundamental education is to ensure the optimal conditions for the interaction of different types of thinking and to create an inner need for self-development and self-education throughout a person's life.

The idea of holistic education, being that of universal education, has always accompanied the idea of the university, and it was not by chance that the university of the 20th century was initially focused on the principle of holistic education: it had no rigid specialization, which came in later, and no rigid division into faculties. The feasibility of the very idea of fundamentalization of the university education basically lies in an interdisciplinary synthesis of the fundamental courses within the concept of holistic education. This can be achieved by familiarizing the students of sciences with the humanitarian culture and the students of humanities with the culture of natural sciences, which will form a basis for development of intuitive imaginative and rational logical types of thinking. What is the educational situation that can be related to the integrity of education? Evidently, this is the integrity of fundamental education, being the basis and purpose of the new paradigm of elite university education, as the interaction of sciences and humanities implements the ideal of a single integrated culture: education becomes fundamental once it is aimed at identifying the underlying essential foundations and relationships between the various processes of the outside world. The fundamental knowledge of these foundations and relationships lies in the general sciences and humanities, reflecting the general logic and structure of the relevant fields of knowledge from today's perspective. Education becomes holistic once these general disciplines form integral cycles of fundamental disciplines, united by a common objective function, object of study, methodology of constructing each of the disciplines, and focused on interdisciplinary connections. Nonetheless, the idea of integrity, which alone can provide a new paradigm of elite education at the university, as well as to implement the principle of fundamentalization of university education, will not be fully implemented unless the integrity of the cycle of natural sciences is provided for. To accomplish this, there exist regulations, in particular, the now approved "Requirements for the cycle of general mathematical and scientific disciplines for higher education", including generalized requirements for the educational level of bachelors and the minimum content of the common cycle in the natural sciences for three areas of preparation for the bachelor degree (in sciences, humanities and technics). As an example of implementing the principle of educational integrity, one may regard the new discipline "Concepts of Modern Science" for the humanities, which presents the general concepts of natural sciences in their interrelation on a basis of the evolutionary synergistic approach.

This discipline is a result of interdisciplinary synthesis based on integrated historical, philosophical, cultural and evolutionary synergistic approaches to modern science. Therefore, its efficient teaching can be achieved through the use of a new paradigm capable of uniting the two cultures through the awareness of the universal role of the metalanguage that synthesizes the fundamental laws of science, philosophy and synergetics. The implementation of a fusion of the two cultures is reflected in the theory of dissipative structures and in the principles of synergistic approach; this theory is a new vision of the world, in which there occurs the formation of the new universal metalanguage, which enables the synthesis of the scientific and humanitarian cultures, thus ensuring the integrity of each of these cultures. Synergetics, presently called evolutionary natural history, actively introduces its ideas in the humanities and natural sciences, which allows one to realize the idea of interdisciplinary synthesis within an integrated historical, philosophical, cultural and evolutionary synergistic approach. The formation of the basics of a new educational concept that promotes a new scholarship for specialists and a humanization of university education develops the basics of a synthesis of such areas of culture as the sciences and humanities; this is possible only as a mutual enrichment of these areas at a new level of technological civilization, which will provide the basis of formation of a single integrated culture. As one applies this thesis to the problems of formation of the elite educational sphere at the modern university, one can identify the paths and directions of this synthesis. In the most general form, this will look like an inclusion of the natural sciences in the humanities and an inclusion of the humanities in the natural sciences and engineering, which will promote the development of the fundamental and holistic education of a specialist capable of realizing a need to change the area of activities. There are principles of university education that are common to both the students of humanities and the students of natural and exact sciences: "These principles should include a specific set of knowledge and skills. But perhaps the most important of what has been given the least of attention in previous years are the concepts of the purpose and meaning of life, which have to be fostered, shaped and recreated in the soul, mind and heart of a student. The basic principles of higher education in humanities should teach, foster, cultivate and develop the skills, while specifying the purpose and meaning of life. At the same time, they have to include concepts, knowledge and skills from the natural and technical sciences; this is as certain as the fact that this knowledge has to influence the understanding of personal significance, of the intrinsic value of the natural world, and of the scientific picture of the world." It is essential that fundamental science should be conceived as a means of spiritual self-perfection and a means of shaping high ideals.

Faced with the development of the civilization of the 21st century, analysts have come to discuss the issue of "new humanism". N.N.Moiseev in "Civilization of the XXI Century –Importance of Universities" argues that humanity is coming to a large-scale environmental crisis, with the same fundamental consequences as the crisis of the Neolithic civilization; it can be worldwide; it can be fraught with a tenfold decrease in the number of the planet's inhabitants; it can result in the disappearance of the human species. These effects are caused by the anthropogenic pollution of the biosphere, the inevitable climate change, the change in the ozone layer, and the intensification of mutagenesis (Moiseev, 1994). The main cause for the crisis is the one which was mentioned 200 years ago by Malthus, if one takes the problem in a broader sense, as the fundamental non-eliminability, in the framework of modern civilization, of the misalignment between the growing needs of a growing population and the opportunities to meet them without changing the existing ecological niche and social (i.e., life-affirming) paradigms. This thesis can be found in the works of M.Vinogradov, G.Mikhailovsky and A.Monin. For the existence of mankind in an environment of stable biogeochemical cycles (natural and artificial), one should reduce the need for energy by 10-12 times with respect to the share of energy costs that man receives from renewable energy sources. Today one identifies the evident obstacles to the solution of this most difficult problem as being technological and moral ones. A new state of quasi-equilibrium, which some authors call a condition of co-evolution of man and biosphere, can be achieved only in a new civilizational paradigm, with no place left for spontaneous factors. A condition for reaching this state of quasi-equilibrium should be the formation of a particular strategy. "We are to enter" – argues N.N.Moiseev – "into a really new round of anthropogenesis, and it is difficult to say anything as to whether humanity will be able to overcome this bifurcation with a poorly predictable outcome." (Moiseev, 1994) The appearance of transition strategies is associated only with the well-developed collective intelligence of humanity; the problem of the formation of

strategic guidelines for decades will determine the nature of the areas of fundamental research. These directions, embedded in the new system of university education at the turn of the 20th/21st centuries, in conditions of the civilization of the 21st century will ensure a transition to the mode of co-evolution, the new phase of anthropogenesis. This will be the case of deliberate transition to a stage which N.N.Moiseev aptly characterizes as a life in conditions of the ecological imperative, which is possible under the conditions of a society being not only rationally organized, but also educated, and this will upgrade the status of the university in conditions of a society prepared to cross the threshold of noosphere. The mission of the university will not only be the training of specialists, but also the formation of the outlines of a civilization which is to implement the principles and guidelines of the new environmental strategy. The university of the 21st century will take on new functions. It is noteworthy that in the late 30s of the 21st century there will be an impressive amount of people, whose purpose of activity will be the implementation of the co-evolution mode (industry and agriculture will employ about 8% of the population), being the sphere of the future management. They are to be really creative elite professionals. In these circumstances, the university education should be open enough, while narrow professionalization will be its termination. The system of university education these days shows a confrontation between the two educational civilizations/cultures: the humanitarian and scientific ones. The meaning of the era when mankind has approached the threshold of noospheric civilization lies in a conjunction of these two cultures; any kind of knowledge gained at the modern university is a prerequisite for solving purely human problems, being those of futurity. The humanitarian and scientific cultures should discover a common information space, which should be the formation of new skills of thinking; the man of the 21st century must learn to “look at his activities from a viewpoint common to all mankind, from the perspective of relationship between society and Nature. Sprouts of the new civilization must be born and cherished in universities.” (Moiseev, 1994) There is a need for an environmental “arithmetic” being one for all civilizations and just as necessary as the existence of several civilization invariants determined by the interaction of humanity as a species with the rest of the biosphere. These ecological basics have to be found, and the role of universities in this is unsurpassed. This is not only environmental knowledge, but also knowledge focused on the morality and spiritual life of man, ethics and common ideological principles. The dominant postulate of modern rationalism is the idea of relationship of nature and man. In the literature, it is proposed to regard this idea as being composed of three units: the idea of the physical principles of modern rationalism, which is distinct from classical rationalism; the doctrine of living matter and the Universe, which serves as a methodological basis of modern knowledge; the problem of interaction between man, society and nature; an introduction to the theory of noospherogenesis (Moiseev, 1994).

Whereas the ideas of God and of esoteric nature of the world, involved in the formation of world view (such as the idea of internal ideal world), lie outside the university education, the idea of Nature, based on the experience of practical thinking and used to form the experience of the rationalist view of the world, is generated in the educational space of the university; this is a concentrated experience of human practice that allows one to evaluate activities, including the prospects for the future. This is necessary for human survival. And this, perhaps, is the primary responsibility of universities. Solving the problem of humanization of university education is related to overcoming the prevailing technicist orientation: the decisive problem is to overcome the ideological technicist doctrine, from the standpoint of which reality is perceived as being similar to a complex of technical devices. One can suggest an image which embodies the original idea of technicism: “The god of technicism is a great engineer. The world he created is the Promised Land for the human engineer: it embraces all as a subject or means of engineering activities, being the first to give the true meaning to things; the world will be saved by engineering care”; this doctrine sees the world through the prism of engineering profession; this doctrine aspires to extend intradisciplinary standards and values to all of reality, while, at the same time, this doctrine inherently disregards engineering norms and traditions. Technicism, as a special phenomenon of spirituality, is not in the recognition of technical and technological parameters as conditions and factors, but rather in the downgrading of all the rest to technical specifications and technological factors: in this situation, the problem of the “ecologization” of the system of relations “man-society-nature-knowledge-technology” becomes extremely critical. It is known that V.Solovyov once defined a kind of strategy used as a basis for “ecologization” we have just mentioned. In the opinion of V.Solovyov, nature is not, in itself or taken separately, the goal of our work, but

rather it is included in this goal as a separate, independent member, is entitled to our support for its transformation and elevation, and, of course, the moral status of a future specialist is determined by the value status of nature, which, in turn, depends on the existence of man as a species. The moral way of life of a specialist, a graduate of the university, shall be the only promising one. As some authors believe, ecology reveals the cosmic sense of ethics, and ethics reveals the existential meaning of ecology. The contents of this process of ecologization of nature, related to the overcoming of the technicist orientation of a university graduate, lies in the fact that nature, as it were, loses its ability to be only the environment, only the means and the object; nature ceases to be only nature. Man "... exists neither in himself nor in nature, but rather in a combination of himself with nature, society, technology and noosphere, the sphere of reason. He has realized himself already as man-technics, and technics at the cybernetic stage, in turn, becomes increasingly evident as his second "inorganic body" (the first "inorganic body" of man being nature)." Elite specialists trained by the university should take into account the results of pre-project research and studies, as well as the principles of forward-looking design culture. A university education should include the formation of a unified project culture, which will enable a university graduate to overcome such issues of design as low design ability (projects are utopian or replaced by programs) and loss of social parameters. Design culture enters the phase of its formation, its overall level being quite low. This culture is limited by a number of design procedures, which, in turn, are specific ones. Their specific character is as follows: "In planning a project, the social designer, as a rule, primarily implements in this project the values and demands of his own, often missing or disregarding the values and demands of other "potential participants" of design (customer, consumer, approving bodies, etc.). Another feature is that a new project is devised and based not so much on the knowledge of its nature (social and cultural) as on the existing prototypes, i.e., samples already designed or established in the culture. During the development phase, this same feature is seen in the fact that the design assignment and the description of the design elements and connections are made in a constructive way, and the relationships and connections are not so much actually generated and constructed as supposed to exist in reality. This last point needs to be clarified. Does not the designer do this all the time, does he not design arbitrarily? He certainly does not. In traditional design, a new structure must be based on the knowledge of natural processes, as well as on technical and technological knowledge, which is the prerequisite of design culture of a future specialist." In a crisis of the education system, it has become apparent that this system is in discrepancy with the future type of society and with the corresponding cultural background. Society is not satisfied with the traditional models of education, which have ceased to be efficient; in particular, small efficiency is shown these days by the discipline-oriented education model, in whose limits the interdisciplinary communications are widely broken. The specific character of formation of the postindustrial society manifests itself, in particular, in the fact that this society evolves on the background of technological culture. In the first place, man actively interferes in natural processes, using powerful technological tools (computers, industrial robots, controlled biotechnological reactions, etc.). New "technological organisms" are created: systems with interdependent components, whose actions are aimed at reaching objectives formed by their creator. At the same time, there is a situation characterized by A.Bartsel as follows: "In practice, man has long realized his inherent nature to be the founder and creator, but has so far missed the most important thing: to make sure his creation is good." (Bartsel, 1999) In the evolutionary process of education, there are two clear trends, which may be roughly defined as nature- and culture-oriented ones. In the context of the first one, education reveals a person's natural abilities, while the culture-oriented trend is an education in which abilities are influenced by public life. It is necessary to make these trends mutually consistent and, at the same time, complementary, however, on one condition: the person should naturally possess the qualities of the creator, and the education system itself should no longer be a "millstone" grinding the human nature; instead, it should create conditions for the realization of the qualities of the creator. As one creates a new model of university education, one must take account of all types of cultural systems: technical, informational, humanitarian, engineering, and scientific. It appears to be a topical problem to create an education model which should be equally in keeping with nature and universal culture. This problem is posed today by several authors working in the field of philosophy of education, including O. Dolzhenko, O. Agapova, A. Krivosheev and A. Ushakov. It is noteworthy that the universal culture is regarded by some authors as being technological, synthesizing different types of

subcultures: scientific, technical, informational, humanitarian, engineering, etc. University education these days faces a number of challenges, such as fundamentalization and humanization, individualization and democratization; a means of solving the emerging problems is the development of a creative design model of education. Raising the issue of educational design, I. Zimnyaya, V.F. Sidorenko and J.K. Jones believe that design ability is aimed at the development of design culture amongst students, as a general form of implementing the art of planning, forecasting, and creation. Design ability has the capacity to combine seemingly disjoint areas of education (humanities, sciences and technics), while design ability itself may be represented as an educational trend of the future. The creative design model changes the structure of educational material. In the creative design model, the communications of the training material are established in accordance with the principles of the hierarchy of the material world, logic and common sense, and the deployment of the system of concepts occurs in the dynamics of design activities. Educational process shows a certain recurring theme: the cognition of the outside world takes place in the course of work on projects: on design, modeling, engineering and research, and in addition to the logical scheme of analysis of the outside world, accepted in the traditional system of education, there is also a scheme of synthesis implemented in computer environments. It is the discourse of the design-oriented model of education that should realize the development of a new type of elite education. The interest in the project-oriented education model is caused by the need to create interdisciplinary connections. As regards the potential of the project-oriented model of education, in particular, the first experimental model of creative design in education, “Strategic Educational Initiatives”, has been created in the Russian Research Institute of Information Systems. It will provide a platform for an educational environment that will fully unfold the capacities of a student and implement the possibilities of different types of culture, namely, informational, humanitarian, scientific, etc., being the subcultures synthesized within the limits of technological culture. This model has its own logic of educational process; according to some authors, it is focused on the idea of comprehending the outside world in the context of its “creation”, design, modeling, engineering, research, and a comprehensive analysis of the results of a finalized project from the standpoint of its qualitative and quantitative level, as well as in terms of “growing accustomed to the outside world”. The implementation of the education model of creative design will promote conditions and preconditions for an orientation of the educational process at reflecting the relationships of the real world; it will create a basis for perception of a coherent picture of the world; it will look at the world as a natural environment, and, in this sense, it will largely implement such a topical issue as the humanization of university education and the training of elite specialists. The anthropocentric focus of this model is that it regards knowledge as a means of development of the student; it ceases to be an end in itself; the model identifies the creative source of cognitive process; the model changes the student’s understanding of a significance of the acquired knowledge: the importance of ready-made knowledge is significant only with a high learning motivation, which does not happen too often. It should be recognized that the problem of creating the means of motivation has never been solved in conditions of the industrial society; this problem will disappear if education becomes as close to real life as possible, and the knowledge personally acquired during the preparation and implementation of a creative project will always be more important than ready-made impersonal information.

The problems of design culture are not new: one of the first social projects should be recognized as “The Republic” of Plato, and the 20s–30s of the 20th century marked the appearance of design ideology. Today, we can speak of the development of social engineering under the management of science, a direction called “forward-looking social engineering”. And, of course, a complete identification of social engineering, on the one hand, with social planning and program-target method, on the other hand, is impossible. In the methodology of management science, plan can be considered as a particular kind of project, and the program-target method, as a form of planning.

Today we can only speak of the early days of social engineering. This is a kind of unconventional design which some authors identify, by a number of features, with innovation, which facilitates the development of new systems, structures, relationships, and which necessitates methodological control over design procedures, whereas forward-looking design is understood in reality not as a species of design, but rather as pre-project analytical procedures. Low design ability and loss of social parameters can be overcome if social engineering is

not reduced to social planning, science or program-target method; methodological settings mean that the technology of social engineering must be controlled and focused on the concepts of design methodology. There is a phenomenon called “project fetishism”, when a project existing only in design is perceived as already materialized. But the strategy of a project for a future specialist should be understood not only as the development of this project and its implementation, but also as an analytical procedure for the study of the complex environment of the project, which is able to ensure its effective implementation. The determination of the paths and directions of forming the project-oriented model of university elite education will be a prerequisite for the development of the modern strategy of the university educational initiative in Russia.

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